Light is Vision.

intraLED 3
intraLED 5

User Manual

Art. 17501.000 (intraLED 3 Volpi)
Art. 17502.000 (intraLED 3 Schott-Fostec)

Art. 17515.000 (intraLED 5 Volpi)
Art. 17516.000 (intraLED 5 Schott-Fostec)

User manual (EN) intraLED 3 / intraLED 5, Version 2.0
Art. 17501.781

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intraLED 3 / intraLED 5 user manual

Congratulations on your purchase of the intraLED 3 or intraLED 5 LED light source from Volpi. The intraLED 3 and the intraLED 5 are ideal light sources for a variety of applications in industrial image processing and automation technology.

intraLED 3 and intraLED 5 offer a very high light intensity, a simple operating concept, and versatile remote control options.

The light sources are available with wight light color (typ. 5800K to 6200K) in two versions and are thus compatible with fiber-optic lighting components from Volpi and Schott-Fostec (Schott light guides with a connection diameter of 18.3 mm). Fiber-optic light guides with an active diameter of between 5 and 14 mm can be used in conjunction with intraLED 3 and intraLED 5.

The key features of intraLED 3 and intraLED 5 are:

- intraLED 3: over 500 lumens luminous flux (measured after a 1 m light guide with an active diameter of 13.5 mm).
- intraLED 5: over 700 lumens luminous flux (measured after a 1 m light guide with an active diameter of 13.5 mm).
- 50,000 hour LED lifetime (intensity declines to 50%).
- Serial interface, digital, analog, and trigger inputs.
- Storage of current settings if the power supply is interrupted.
- Compact housing and simple system integration (M4 threaded rails on 4 sides).

Thanks to their characteristics, intraLED 3 and intraLED 5 are intelligent and powerful LED light sources for flexible use in individual applications and larger inspection facilities.

Please read this user manual thoroughly before operating your new light source for the first time and pay particular attention to the safety guidelines.

Please note: intraLED 3 and intraLED 5 are based on one platform with an identical aluminium enclosure. All product photos in this manual showing intraLED 3 are also representative for intraLED 5.

1 Safety Notes

General safety guidelines

- Please read this handbook thoroughly and follow the directions in it.
- Carefully store all safety guidelines and operating instructions for later use.
- The light source may only be opened by authorized personnel. There are no parts inside the light source which can be serviced by the user.
- Clean it with a moist cloth after the power supply has been switched off. Liquid must not get into the housing.
- Make sure that there is always proper ventilation. The rear side of the device may not be covered. This applies particularly to the ventilation slits. The minimum distance is 10 cm.
- The light source must be operated with an input voltage of 24 VDC (+/- 10%).

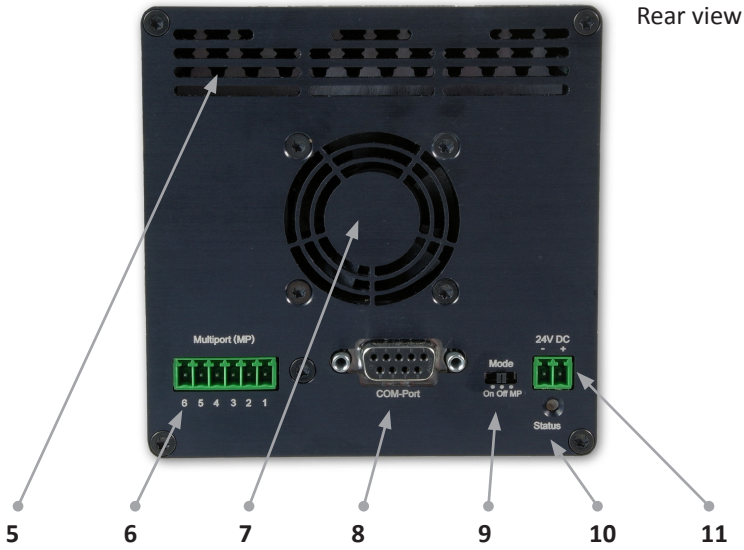
LED RADIATION:

AVOID DIRECT VIEWING OF THE LIGHT. ALL LED AND LED-BASED PRODUCTS ARE SOURCES OF LIGHT WHICH CAN IN SOME CIRCUMSTANCES CAUSE DAMAGE TO THE EYE.

2 Overview

Front and side view

Rear view



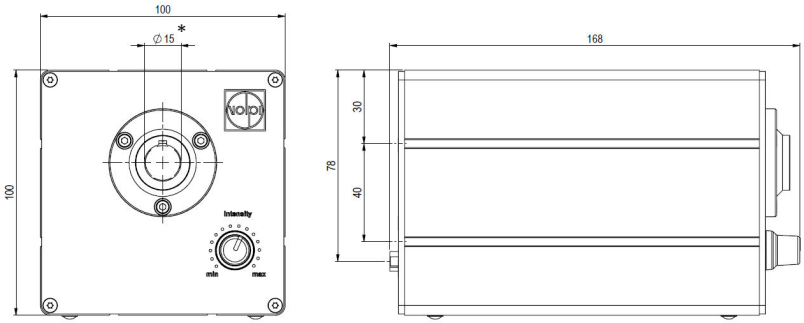
Control elements and displays

1 Connector for fiber optic light guides
2 Intensity potentiometer
3 Intensity scale
4 M4 threaded rails (two rails at 4 sides)
5 Air outlet
6 Multiport connector
7 Fan inlet
8 COM-Port (Standard RS-232)
9 Mode switch
10 Status LED
11 Power connector 24VDC

Scope of delivery

- Light source intraLED 3 / intraLED 5
- Mains adapter
- power cable
- Multiport plug
- User manual (DE/EN)

Dimensioned drawing (indication of measurements in mm)



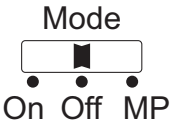
*Volpi light guide connector 15mm (Schott-Fostec 18.3mm)

3 Initial Operation

Please follow these steps when starting the light source for the first time:

- Set the operating switch (9) to the Off position.
- Connect the power unit included in the delivery to the power supply (11).
- Connect the power cord to the power unit and plug it in.
- Optional: The light source can also be connected to the available electrical system via the power supply (11). The input voltage must be 24 VDC +/- 10%.
- Optional: Create a data connection via the COM-Port (8) with an RS-232 data cable (data cable not included).

Operation selection



You can set the desired type of operation with the operating switch (9).

On

- The light intensity can be set using the potentiometer on the front of the device (2).
- The fan will switch on/off based on the temperature.
- The source for the intensity setting (potentiometer - preselected, analog input or COM-Port) via the COM-Port (8).

Off

- No light.
- Fan is off.

Note:

Switching the operating switch from On or MP to Off will reset the following states:

- Input source (set via COM-Port)
- Trigger logic (set via COM-Port)
- Error (if the error is no longer present)

MP (Multiport)

- The light intensity can be set via the analog input of the multiport (6).
- The fan will switch on/off based on the temperature.
- The source for the intensity setting can be selected via the COM-Port (8) (analog input – preselected, potentiometer or COM-Port).
- The logic of the trigger input on the multiport can be determined via the COM-Port (high active – preselected, low active).

You can find the plug layout of the multiport connection under “Technical Data”.

4 Operation

After the initial start-up and operation selection, the light source can be operated via the selected source for the intensity setting.

Operation selection **On** (basic setting):

- The light intensity can be adjusted using the potentiometer from no light to 100%.

Operation selection **MP** (basic setting):

- The light intensity can be adjusted using the analog input on the multiport from no light to 100%.

Operation selection **Off**:

- No light is emitted. Communication via the COM port is active.

5 Power Failure

If the power supply is interrupted, the current settings (input source, trigger logic) will be automatically saved in the light source.

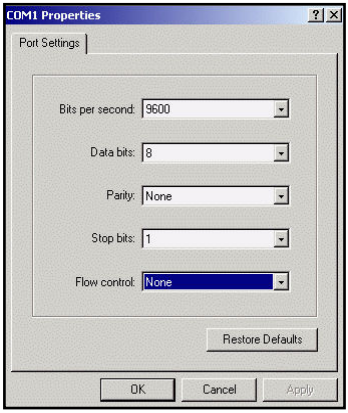
6 Serial Interface

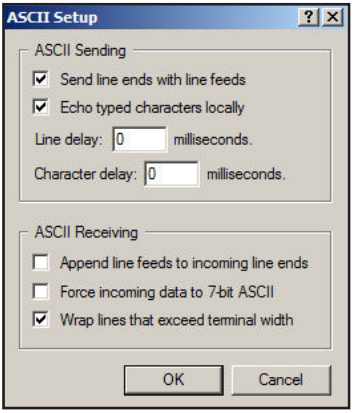
The HyperTerminal of Microsoft Windows can be used as a means of communication.

Note: HyperTerminal is no longer included in Windows operating systems since the introduction of Windows Vista. HyperTerminal or alternative programs can be installed in current operating systems. Please contact technical service for support (Chapter 12).

Serial interface settings on the HyperTerminal:

Bit/s	9600
Data bits	8
Parity	none
Stop bits	1
Flow control	none





7 Serial Protocol

The light source understands 11 commands, all of which begin with the start character “>” (ASCII 0x3E) and must be concluded with the enter key ↵ (ASCII “CR LF” or ASCII 0x0D, 0x0A).

Essentially, the commands are divided into 2 groups, **SET** commands and **GET** commands. With the **SET** commands, actions are carried out in the light source and/or data are written. If data are written in the light source, they must consist of 5 digits from 0-9. The interpretation of these 5 digits and the commands are described in greater detail in Chapter 8.

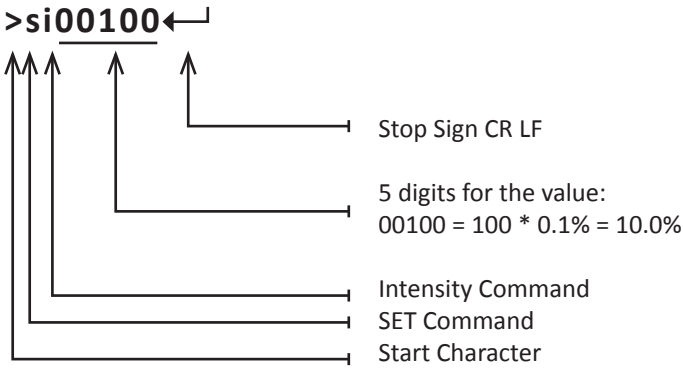
GET commands are used to read the data from the light source.

8 Serial Protocol / Commands

Intensity

The intensity can be adjusted with a resolution of 0.1%.

Adjust Intensity (set)



After sending this command the source for the intensity control will be automatically changed to COM-Port and the entered value will be set.

Query: >si00100

Reply: >si00100

Intensity Readout (get)

>gi↵

Query: >gi↵

Reply: >gi00555↵

Value: 00555 = 555 * 0.1% = 55.5%

Firmware/Software Version (get)

>gz

Query: >gz↵

Reply: >gz00010↵

Value: 00010 = 10 * 0.1 = 1.0 (Version 1.0)

System Temperature (get)

>gt↵

Query: >gt↵

Reply: >gt00356↵

Value: 000356 = 356 * 0.1 = 35.6°C

Source for intensity setting

The source for the intensity setting can be selected with 3 different commands.

Potentiometer (set)

>sp↵

Query: >sp↵

Reply: >sp↵

Analog Input (set)

>sa↵

Query: >sa↵

Reply: >sa↵

COM-Port (set)

>sr↵

Query: >sr↵
Reply: >sr↵

Setting the trigger logic

The trigger logic can be set with 2 different commands. Trigger function is only active in operating mode MP (Multiport). In Low-Active the source for intensity setting is enabled with the trigger input signal „0“. In High-Active it is enabled with the signal „1“.

Trigger Low-Active (set)

>sl↵

Query: >sl↵

Reply: >sl↵

Trigger High-Active (set)

>sh↵

Query: >sh↵

Reply: >sh↵

System Status

The system status can be read out in all operating settings (On, Off, MP).

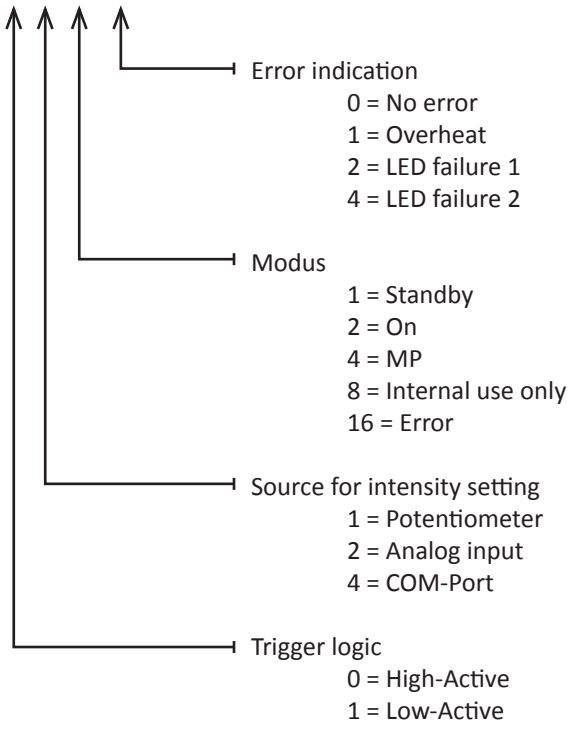
System Status (get)

>gs↵

Query: >gs↵

Reply: >gsnnnnn↵

Value: n n nn n



Error reset

If an error is no longer present it can be resetted with one of the following ways:

1. Set operating switch to „Off“ and reset.
2. Disconnect the light source from the power supply.
3. Send a **Set** command via the COM-Port.

Failure Reset (set)

>sy↵

Query: >sy↵

Reply: >sy↵

Undefined Queries and Timeouts

In case of timeout or undefined queries the light source replies with an error.

Query: undefined or timeout

Reply: >err↵

9 Cleaning

If necessary, the device housing can be wiped with a slightly damp cloth. The power plug must be removed before cleaning. Please do not use cleaning agents which contain solvents, oil distillates, volatile or flammable substances. Liquid must not get into the housing.

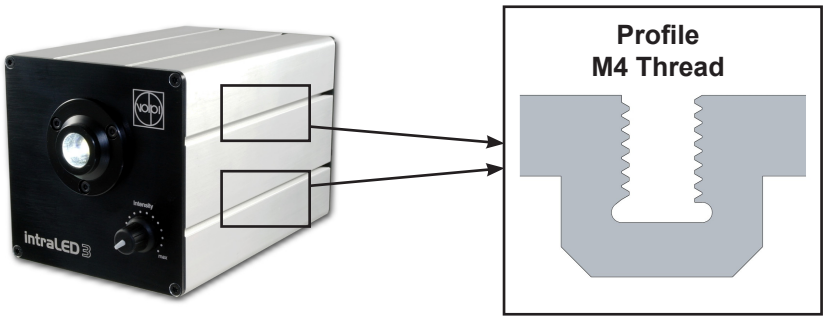
10 System Integration / Installation

Enclosure dimensions:
L 168mm x B 100mm x H 100mm

Cooling air intake and exhaust:
The ventilation slits are located on the rear side of the housing and must not be covered. The minimum distance is 10 cm.

CAD data:
You can download a CAD volume model over the Internet from **www.volpi.ch/intraLED3** (Downloads tab).

Installation equipment:
The light source housing has 2 threaded rails which extend from front to back on each of 4 sides for installation with M4 screws. The installation points can be anywhere along these rails. We recommend at least 4 anchor points.



11 Troubleshooting

Failure	Possible Cause	Solution
No light.	No or insufficient power supply	Check cables and connector plugs, replace power supply if necessary.
No light.	Operating mode is set to „Off“.	Set operating mode to „On“ or „MP“ and adjust the intensity (trigger signal could be needed depending on the settings).
No light.	Intensity setting is too low.	Increase intensity.
No fan sound.	System temperature is low.	No action required.
No light, status LED is flashing slowly.	Overtemperature, air inlet and/or outlet is covered.	Please check if air inlets and outlets are uncovered. Minimum distance is 10cm.
No light, no fan sound, status LED is flashing slowly.	Overtemperature due to broken fan.	Please contact our technical service.
No light, status LED is flashing rapidly.	LED seems to be defective.	Please contact our technical service.
Light flickers.	Low power supply.	Input voltage must be 24 VDC (+/- 10%) / 55W.
No COM-Port connection possible.	No connection.	Please check COM-Port cable connection.
No COM-Port connection possible.	Wrong COM-Port, incorrect settings.	Check Chapter „Serial Interface“ for correct settings.
Other failures.		Please contact our technical service.

Note:
Opening the light source housing during the warranty period will void the warranty. The light source may only be opened by Volpi-authorized personnel.

12 Technical Service

We believe in the quality and durability of our products. Nevertheless, should you discover any defect in a product from Volpi, please contact us. The Volpi service department will examine the device in question and repair it at no cost as part of the guarantee agreement. If the warranty period has already expired, we will send you an estimate in advance.

Please understand that repair costs cannot be estimated without return and analysis.

Volpi Technical Service:

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Technical Service
Wiesenstrasse 33
8952 Schlieren
Switzerland

Tel.: +41 (0)44 732 43 43
Fax: +41 (0)44 732 43 44
E-Mail: mail@volpi.ch

You can find more information online at **www.volpi.ch/customerservice**

13 Technical Data

Optical Specifications

Light sender	White high-power LED
Luminous flux at lightguide output (Active diameter 13.5mm, NA = 0.54, L=1m)	Min. 500 Lumen (intraLED 3) Min. 700 Lumen (intraLED 5)
Color temperature	Typ. 5800 - 6200 K
Color Rendering Index	Typ. 74%
Aperture angle	Typ. 0.5
Active lightguide diameter	Optimized for 5mm - 14mm
LED life time (average life time at environmental temperature 25°C)	50.000h (L50) / 30.000h (L70)

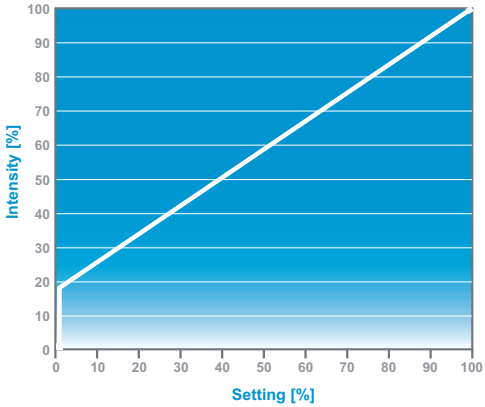
Electrical Specifications

Input voltage	24VDC +/- 10%
Power consumption	Max. 55W
Power supply	External universal power supply 24V/60W
Reverse polarity protection	Yes
Overheat protection	Yes

Control & Communication

Manual intensity adjustment	stepless rotary potentiometer
Operating modes	On, Off, Multiport
Serial interface	RS-232 (9-Pin) (Optional USB)
Multiport	See pin assignment
Intensity resolution	0.1%
Intensity setting tolerance	+/- 2.5%
Response time	approx. 5ms

Light intensity in relation to the intensity setting



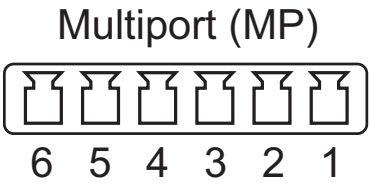
Mechanical Specifications

Mechanical lightguide connector:	
Art. 17501.000	Volpi 15mm
Art. 17502.000	Schott-Fostec 18.3mm
Enclosure	Aluminium, anodized
IP protection class	IP 3X
Mounting	M4 threaded rails (6mm deep)
Dimensions (LxBxH)	168mm x 100mm x 100mm
Weight (without power supply)	1.6 kg

Environmental Conditions

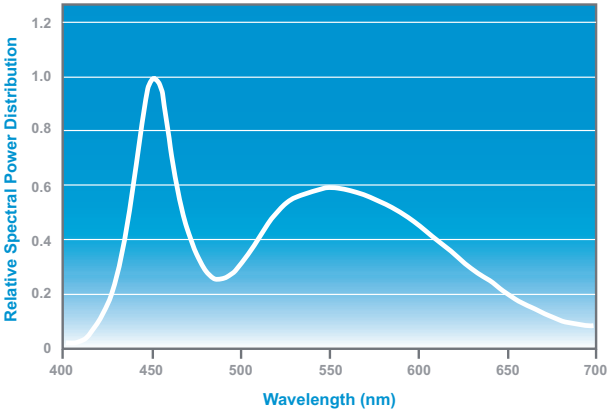
Operation temperature	-10°C to +40°C
Storage temperature	-25°C to +60°C
Humidity	30% to 90%, not condensing

Multiport Pin Assignment



Pin	Pin Assignment
1	Analog Input (0-10V, max. 10.5V)
2	Analog GND (0V)
3	Trigger Input (Low: 0-0.8V / High: 2.0-24V)
4	Digital GND (0V)
5	NC (No Connection)
6	Error Output (Open Drain (Imax. 10mA, Umax.24V) -> No Error: open / Error: closed)

Typical Light Spectrum (High-Power LED white)



14 Replacement Parts

The following replacement parts for intraLED 3 and intraLED 5 are available from Volpi AG.

Part Number	Description
90807.017	Power Supply with connection cable
90820.021	Knob for rotary potentiometer
90805.236	Multiport plug (6 Pin)
90805.235	Power supply plug (2 Pin)
17501.780	Printed user manual german*
17501.781	Printed user manual english*

*User manuals are also available for PDF-Download from the Volpi website:
www.volpi.ch/customerservice

Light is Vision.

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